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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,091	12/18/2000	Marc-David Cohen	343355600017	5305

7590

04/27/2005

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EXAMINER

HECK, MICHAEL C

ART UNIT

PAPER NUMBER

3623

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/740,091

Applicant(s)

COHEN ET AL.

Examiner

Michael C. Heck

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. The following is a Second Office Action in response to the application filed 18 December 2000. Applicant amended claims 1 and 31. Claims 1-32 are pending in this application and have been examined on the merits as discussed below.

Response to Amendment

2. The objection to the Drawings in the First Office Action is withdrawn in response to the applicant's amendment to the Specification.
3. The Claim Objection in the First Office Action is withdrawn in response to the applicant's amendment to claim 31.
4. The 35 U.S.C. § 101 rejection in the first Office Action for claims 1-16 are withdrawn in response to the applicant's amendment to the specification.

Response to Arguments

5. Applicant's arguments see pp. 12 of Applicant's Amendment, filed 04 January 2005, with respect to the rejection of claims 1-32 under 35 U.S.C. § 102(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Data Mining News (Data Mining News, Looking Past Automation, MarketSwitch Focuses on Optimization of Marketing Campaigns, Data Mining News, 10 May 1999 [GOOGLE]) and Balintfy et al. (Balintfy et al., Binary and Chain Comparisons with an Experimental Linear Programming Food Price Index, The Review of Economics and

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Statistics, Vol. 52, No. 3, August 1970, pp. 324-330 [JSTOR]). Data Mining News teaches moving from linear programming to non-linear programming to solve the optimization problem. Balintfy et al. teach the linear programming approach for index number purposes. Please see the 35 U.S.C. § 102(a) and 103(a) rejections below.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraph of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1, 10-16, 17 and 25-32 are rejected under 35 U.S.C. 102(a) as being anticipated by Data Mining News (Data Mining News, Looking Past Automation, MarketSwitch Focuses on Optimization of Marketing Campaigns, Data Mining News, 10 May 1999 [GOOGLE]). Data Mining News discloses a cross-selling optimizer comprising:

- **[Claim 1]** using a computer to retrieve cross-selling relationships that associate purchases of a first set of items with purchases of a second set of items (Para 2, 3, 9 and 12, Data Mining News teaches the MarketSwitch Workstation™ suite will include six optimization modules. The software is capturing impressive mindshare. The cross-selling optimizer calculates the next best product to pitch to each customer. The solution starts by selecting randomly a statistically significant sample of a prospect list.);
- said cross-selling relationships being associated with a cross-selling statistic, wherein the cross-selling statistic is indicative of potential for the purchase of the second set of items based upon the purchase of the first set of items (Para 10, Data Mining News teaches each promotion has an eligibility condition, a response model, and a profitability model associated with it. The examiner interprets the response model to be a cross-selling statistic.); and

- using a computer to determine a cross-selling opportunities metric that solves the business issue, wherein the cross-selling opportunities metric is determined for at least one cross-selling relationship by at least substantially optimizing an objective function with respect to constraints and to the cross-selling statistic, wherein at least one of the constraints is based upon the business issue (Para 10, Data Mining News teaches there is a constraint on a maximum number of offers that go to any customer and, in addition, economic requirements like minimal number of sales, minimal NPV (Net Present Value) per customer, maximal budget, etc. The goal is to determine what offers to send to what customers to maximize total NPV of the campaign, satisfying all the above constraints and conditions. The solution suggested by MarketSwitch calculates the optimal solicitation matrix in one pass through the full prospect list.).
- **[Claim 10]** the cross-selling relationships include association rules, wherein the association rules have left-hand-side items and right-hand-side items (Para 8, Data Mining News teaches what-if scenarios that can quickly be generated with the software. The system will calculate outcomes and allow a simple comparison between the different possibilities.).
- **[Claim 11]** the cross-selling statistic is a lift cross-selling statistic (Para 6, Data Mining News teaches targeting optimizer also benefits from the fact that it solves directly for lift.).
- **[Claim 12]** the lift cross-selling statistic is ratio of the probability of having the right-hand-side items given that a customer has the left-hand-side items, over the probability that the customer has the right-hand-side items. (Para 6, Data Mining News teaches optimizing strictly, mathematically, for lift.).
- **[Claim 13]** the cross-selling statistic further includes an expected confidence cross-selling statistic that indicates the frequency with which the right-hand-side items occurs in the overall population of the first and second set of items (Para 16, Net Mining News teaches the solution calculates the vector of parameters of the adjusted NPV functions, which is a function of the vector of parameters for each customer to respond to each promotion and the vectors of profitability for each customer for each promotion.).
- **[Claim 14]** the first and second set of items includes products to be purchased by customers (Para 5, Data Mining News teaches MarketSwitch's Targeting Optimizer calculates the subset of an available mailing list that will produce the best response or profitability. The examiner interprets profitability is achieved by selling products and/or services.).

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- **[Claim 15]** the first and second set of items include services to be purchased by customers (Para 5, Data Mining News teaches MarketSwitch's Targeting Optimizer calculates the subset of an available mailing list that will produce the best response or profitability. The examiner interprets profitability is achieved by selling products and/or services.).
- **[Claim 16]** the cross-selling relationships and cross-selling statistic are generated from a data miner based upon historical data on sales related to the first and second sets of items (Para 1, Data Mining News teaches layering a set of proprietary techniques over generic data mining algorithms, MarketSwitch performs multidimensional optimization.).

Claims 17 and 25-32 substantially recites the same limitations as that of claims 1 and 10-16 with the distinction of the recited method being a system. Hence the same rejection for claims 1 and 10-16 as applied above applies to claims 17 and 25-32.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 2-9 and 18-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Data Mining News (Data Mining News, Looking Past Automation, MarketSwitch Focuses on Optimization of Marketing Campaigns, Data Mining News, 10 May 1999 [GOOGLE]) in view of Balintfy et al. (Balintfy et al., Binary and Chain Comparisons with an Experimental Linear Programming Food Price Index, The Review of Economics and Statistics, Vol. 52, No. 3, August 1970, pp. 324-330 [JSTOR]). As to Claim 2, Data Mining News disclose a cross-selling optimizer but fail to teach the

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objective function is solved for resource allocation related to the purchase of the second set of items using linear programming optimization. Data Mining News teaches the problem in its original form is a problem of discrete linear programming (Para 11). Balintfy et al. a Linear programming price index is in the functional tradition. The linear programming approach for index number purposes then requires that the commodity combination or market basket be obtained which minimizes the amount spent (Para 9). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to include the linear programming approach of Balintfy et al. with the teachings of Data Mining News since Data Mining News teach minimal NPV (Net Present Value) per customer (Para 10). Companies expect to maximize ROI (Return on Investment) in order to stay in business. MarketSwitch optimizes economic payback and increases campaign productivity and capacity (Data Mining News: Para 4). Balintfy et al. teach one obtains the combination, which satisfies the same constraints as before and minimizes the total cost at the prices of the given period (Balintfy et al.: Para 9). Therefore, optimizing economic feedback and minimizing cost both relate to maximizing the ROI.

- **[Claim 3]** the objective function is solved for personnel effort resource allocation related to the purchase of the second set of items using linear programming optimization (Balintfy et al.: Para 21, Balintfy et al. teach given the prices of all foods contained in the menu items in the model, linear programming is then employed to find the set of menu items which minimizes the cost of meals per person-day over the 31 day planning cycle, subject to meeting the constraints described.).
- **[Claim 4]** one of the constraints is based upon target effort for an item (Balintfy et al.: Para 16, Balintfy et al. teach an "Upper Bounds" constraint, which is the maximum number of times in a 31-day period that a given dish or menu item may be served.).

- **[Claim 5]** one of the constraints is directed to size of markets involving the first and second sets of items (Balintfy et al.: Para 18, Balintfy et al. teach a structural constraint. The model utilizes the concept of three meals per day, 31 complete breakfasts, 62 complete dinner or supper meals for a 31-day menu- planning cycle.).
- **[Claim 6]** one of the constraints is directed to size of markets involving the first and second sets of items such that resource allocation is biased towards markets that are larger than other markets (Balintfy et al.: Para 15, 16 and 18, Balintfy et al. teach the objective was to determine, at prevailing prices, the least cost combination of meals per person-day for a 31-day planning cycle period, satisfying given structural, nutritional, palatability, and variety constraints. The upper bounds constraint is the maximum number of times in a 31-day period that a given dish or menu item may be served. The structural constraint utilizes the concept of three meals per day, 31 complete breakfasts, 62 complete dinner or supper meals for a 31-day menu- planning cycle.).
- **[Claim 7]** one of the constraints constrains the objective function to generate resource allocations that are substantially equal for all items whose resource allocations are determined by the optimization function to be greater than zero (Balintfy et al.: Para 17, Balintfy et al. teach nutrient constraint, in which five nutrient constraints are imposed (calories, proteins, iron, thiamin, niacin), reflecting institutional policy.).
- **[Claim 8]** one of the constraints constrains the objective function to maximize the return on equity (Balintfy et al.: Para 15, Balintfy et al. teach the objective was to determine, at prevailing prices, the least cost combination of meals per person-day for a 31-day planning cycle period, satisfying given structural, nutritional, palatability, and variety constraints. The Examiner interprets minimizing cost is a method of maximizing the return on equity.).
- **[Claim 9]** the cross-selling opportunities metric includes an effort cross-selling opportunities metric which solves the business issue, wherein the business issue is directed to the resource allocation that maximizes return on investment related to the purchasing of the second set of items (Balintfy et al.: Para 15, Balintfy et al. teach the objective was to determine, at prevailing prices, the least cost combination of meals per person-day for a 31-day planning cycle period, satisfying given structural, nutritional, palatability, and variety constraints.).

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Claims 18-24 substantially recite the same limitations as that of claims 2-9 with the distinction of the recited method being a system. Hence the same rejection for claims 2-9 as applied above applies to claims 18-24.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Manchanda et al. (Manchanda et al., The "Shopping Basket": A Model for Multi-category Purchase Incidence Decisions, Marketing Science, Vol. 18, No. 2, 1999, pp. 95-114 [JSTOR]) disclose a model of multi-category choice. The model is based on random utility theory and allows for simultaneous, interdependent choice of many items.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Heck whose telephone number is (571) 272-6730. The examiner can normally be reached Monday thru Friday between the hours of 8:00am - 4:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq R. Hafiz can be reached on (571) 273-6729.

Any response to this action should be mailed to:

**Director of the United States Patent and Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450**

Or faxed to:

(703) 872-9306

[Official communications; including After Final communications labeled "**Box AF**"]

(571) 273-6730

[Informal/Draft communication, labeled "**PROPOSED**" or "**DRAFT**"]

mch
18 April 2005


**TARIQ R. HAFIZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600**